

What is claimed is:

1. A method for forming fibers/composite material having an anisotropic structure, comprising the steps of:

mixing an effective amount of fibers with a matrix material to form a deformable mixture containing less than about 96 weight percent of the fibers to about parts per billion of the fibers and wherein the fibers are randomly oriented in the deformable mixture;

extruding the deformable mixture to form an extrudate;

applying pressure about the extrudate to substantially compress the fibers in the extrudate to provide the fibers/composite material having an anisotropic structure.

2. A method as defined in claim 1, wherein the matrix material is selected from the group consisting of polyethylene, poly(para-phenylenevinylene), polypyrrole, polypropylene, nylon-6, polystyrene, polytrifluorochloroethylene and combinations thereof.

3. A method as defined in claim 1, wherein the fibers are selected from the group of fibers consisting of fibrous carbon nanotubes, and fibrous carbon black material.

4. A method for forming a fibrous carbon nanotube/ composite structure, comprising the steps of:
 - mixing an effective amount of fibrous carbon nanotubes with a matrix material to form a deformable mixture wherein the fibrous carbon nanotubes are randomly oriented in the deformable matrix material, the deformable mixture containing less than about 96 weight percent of the fibrous carbon nanotubes to about parts per billion of the fibrous carbon nanotubes;
 - heating the deformable mixture to a temperature of from about 50 degrees C to about 100 degrees C of the melting point of the matrix material;
 - passing the heated deformable mixture through an orifice to form an extrudate;

directing a gas having a temperature of from about 50 degrees C to about 100 degrees C above the temperature of the extrudate onto an exterior surface of the extrudate to align and substantially compress the fibrous carbon nanotubes in the extrudate along the longitudinal axis of the extrudate.

5. A method as defined in claim 4, wherein the matrix material is selected from the group consisting of polyethylene, poly(para-phenylenevinylene), polypyrrole, polypropylene, nylon-6, polystyrene, polytrifluorochloroethylene and combinations thereof.

6. A composition of matter, comprising:
a matrix material;
fibers being anisotropically positioned within the matrix material, to form a composite structure containing from less than about 96 weight percent of the fibers to about parts per billion of the fibers.

7. A composition of matter as defined in claim 6, wherein the matrix material is selected from the group consisting of polyethylene, poly(para-phenylenevinylene), polypyrrole, polypropylene, nylon-6, polystyrene, polytrifluorochloroethylene and combinations thereof.

8. A composition of matter as defined in claim 6, wherein the fibers are selected from the group of fibers consisting of fibrous carbon nanotubes, and fibrous carbon black.

9. A composition of matter as defined in claim 6, wherein the fibers and the matrix material are heated and mixed into a homogenous mixture, and formed into the anisotropic structure through the application of shearing force to the homogenous mixture.